

## WEED SEED EXTRACTION & CONTROL

### Background

Yuma Desert Southwest Region known as the Winter Vegetable Garden Capital of the World. The main water source for this region originates from the Colorado River and is channeled to our ranches through an open water source via canal systems. Majority of our weed seeds are introduced to our ranches from this water source.

### Challenge

- It is common to keep produce fields clean only to find a carpet of purslane when preparing ground for the next season. Some of this weed seed is from the seed bank that had not germinated or was blown or carried into the field by others. We have found that a significant amount of the weed seeds is introduced via our irrigation systems.
- There is no known compact portable automated water filtration system that will flow the necessary GPM and filter at a Micron size needed to combat the highly contaminated weed seeds in our Colorado River Water.
- The weed seeds germinate and compete with the production crops.
- Weeds cause an enormous impact on both conventional and organically grown crops. For example, during the worst conditions in the Yuma Desert Southwest Fall time frame. Local farmers have confirmed their manual weeding cost can hit upwards of \$2,000.00 to \$3,000.00 per acre to manually remove weeds from their organic production crops. In worst case scenarios growers are forced to take a total crop loss.

### The Solution

- GLE has engineered, developed, and fabricated a new patent pending product line, Greenline-Portable Automated Water Delivery System (G-PAWDS™). G-PAWDS™ are modular, compact, portable including power source with automated filtration system that includes a range of micron sizes from 80 micron to 1,000 micron and deliver GPM rates from 100-10,000 GPM or more to meet your irrigation needs.

### Case Study

Greenline Equipment has teamed with the University of Arizona Yuma Agriculture Center and Nunes Company to study Weed Extraction & Weed Control on organic & conventional crops. GLE's new patent pending G-PAWDS were used to prove Brad Chavez & Jim Nunes theory that we could remove the smallest of weed seeds in a scientific 3<sup>rd</sup> party non-bias case study. Jim Nunes with Nunes Company donated an 8.9ac organic test plot that included the sprinkler pipe and manpower needed to commence the tests. Test plot was divided into 6 - ½ acre plots, 3 plots had G-PAWDS™ automated filtration system and 3 plots had conventional double cone filtration systems. We injected 3lbs of alyssum seeds that were similar in shape and size to Purslane. Seeds were measured by U of A and ranged in size from 400-750 microns or .4 – .75 millimeters. Seeds were injected directly into the G-PAWDS™ pump suction side via a venturi. The study was replicated 3 times to make it scientifically verifiable and certifiable by the U of A.

### Outcome

***WE ARE PLEASED TO ANNOUNCE THAT G-PAWDS REMOVED 99.9% OF THE ALYSSUM SEED INTRODUCED TO THE G-PAWDS!***

We recovered over 86% of the alyssum seed that was injected into the G-PAWDS™ by capturing the automated backflush water from the G-PAWDS™. Before switching over to the conventional filtration system we backflushed and inspected the mainline and found no alyssum seed inside the mainline or on the tail ends where drained. We were unable to find any alyssum plants in the filtered plots after 20 days of sprinkler germination water. G-PAWDS™ will not clean up a field in one season but can eliminate a significant source of weed seed and significantly reduce weed problems when used over a period of time.

